FETC FUN FACTS

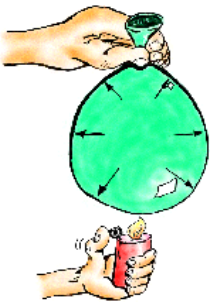
U.S. DEPARTMENT OF ENERGY
OFFICE OF FOSSIL ENERGY
FEDERAL ENERGY TECHNOLOGY CENTER

What Is a Gas Turbine and How Does It Work?

A **gas turbine** is a major power source used in the generation of electricity. It uses a high-temperature, high-pressure gas as the working fluid. Part of the heat supplied by the gas is converted directly into the mechanical work of turbine rotation. A greater understanding of the gas turbine and its operation can be gained by considering its three major components: a compressor, combustor, and a turbine. It has a compressor to draw in and compress gas (usually air), a combustor (or burner) to add fuel to heat the compressed air, and a turbine to extract power from the hot air flow.

Air Intake

Air Compresses



Air Heated

High Pressure Air Turns Turbine Blades Creating Electricity

The **compressor** is the first stage of a gas turbine. As the name implies, the compressor squeezes large volumes of air into a smaller space, thus increasing the pressure.

In the second stage, the **combustor**, this compressed air is heated by burning fuel. As we all know, heated air tries to expand. When it is confined to a fixed volume, as it is in the combustor, the pressure rises even more.

In the **turbine**, the high-temperature, high-pressure air rushing out of the combustor pushes against the turbine blades, causing them to rotate – much like blowing on a fan. For electric power, the turbine is connected by a shaft to a generator. Turning the generator produces electricity!

Contact Point:

Abbie W. Layne
Product Manager
U.S. Department of Energy
Federal Energy Technology Center
P.O. Box 880
3610 Collins Ferry Road
Morgantown, WV 26507-0880
(304) 285-4603
alayne@fetc.doe.gov

Customer Service:

800-553-7681

Visit our web site at
www.fetc.doe.gov

FETC